

1. An article of manufacture comprising a program storage medium readable by a processor and embodying one or more instructions executable by a processor to perform a method for passing data between an eXtensible Markup Language (XML) document and a hierarchical database, the method comprising:

providing a hierarchical database;

providing a metadata schema derived from the hierarchical database, the

metadata schema comprising a first representation representative of

the hierarchical structure of the hierarchical database, a second

representation representative of the hierarchical structure of XML

documents valid for passing into and out of the hierarchical

database, a database field name, and an XML element name that

maps to the database field name; and

passing data between an XML document and the hierarchical database

using the metadata schema.

2. The article of manufacture of claim 1, wherein passing data comprises storing the eXtensible Markup Language (XML) document in the hierarchical database, the method further comprising:

receiving the XML document comprising XML elements organized

according to the metadata schema;

matching an XML element of the XML document with a metadata element

defined in the metadata schema; and

storing content data from the XML element in a database field of the

hierarchical database identified by the matching metadata element.

3. The article of manufacture of claim 2, further comprising selectively storing a sub-tree of the XML document intact in one or more nodes of the hierarchical database in response to a directive metadata element in the metadata schema, the sub-tree comprising an XML root element and one or more XML descendent elements stored with XML formatting information.

4. The article of manufacture of claim 1, wherein passing data comprises storing the eXtensible Markup Language (XML) document intact within the hierarchical database, the method comprising:

receiving the XML document and a database node identifier;

initializing a first database node of the hierarchical database identified by the database node identifier;

sequentially writing raw data from the beginning of the XML document into the first database node; and

selectively identifying a break point in the XML document, in response to the first database node filling with raw data, the method further comprising,

initializing a second database node that is a child of the first database node; and

sequentially writing raw data from the break point of the XML document into the second database node.

5. The article of manufacture of claim 4, further comprising:
examining each XML element in the XML document and corresponding
metadata element in the metadata schema, in response to an index
indicator identified within the metadata schema for the XML
document;
storing an index value from an XML element identified by the index
indicator;
generating a secondary index that includes the first database node and at
least the index value, such that the first database node is locatable
using a database query that includes the index value.

6. The article of manufacture of claim 1, wherein passing data comprises
retrieving the eXtensible Markup Language (XML) document from the hierarchical
database, the method further comprising:
receiving a query for the XML document;
matching each database field of the hierarchical database with a metadata
element defined in the metadata schema;
generating an XML element defined by the matching metadata element,
the XML element comprising content data from the matching
database field; and
assembling the XML elements into the XML document.

7. The article of manufacture of claim 4, further comprising selectively retrieving a sub-tree of the XML document from one or more nodes of the hierarchical database in response to a directive metadata element in the metadata schema, the sub-tree comprising an XML root element and one or more XML descendent elements stored with XML formatting information.

8. The article of manufacture of claim 1, wherein passing data comprises retrieving the (XML) document in an intact format from the hierarchical database, the method further comprising:

receiving a key that uniquely identifies the XML document within the
hierarchical database;

locating a first database node of the hierarchical database identified by the
key;

sequentially writing raw data from the first database node into the XML
document;

selecting a descendant database node of the first database node, in
response to an indicator in the first database node, and sequentially
writing raw data from the descendant database record into the
XML document.

9. The article of manufacture of claim 8, wherein the first database node and descendant database node have at most one direct descendant.

10. The article of manufacture of claim 1, wherein the metadata schema comprises a database field type identifier and an XML element data type identifier that maps to the database field type identifier, the method further comprising selectively converting content data between the XML element data type and the database field type based on the database field type identifier and the XML element data type identifier.

11. The article of manufacture of claim 1, wherein the metadata schema comprises an XML schema generated from the hierarchical database and a database schema indicative of database field names and associated database field types for database fields of the hierarchical database, the database field names each mapping to a corresponding XML element in the XML schema.

12. The article of manufacture of claim 1, wherein the hierarchical database comprises an Information Management System (IMS) database.

13. An apparatus for passing data between an eXtensible Markup Language (XML) document and a hierarchical database, the apparatus comprising:
- a hierarchical database;
 - a metadata schema derived from the hierarchical database, the metadata schema comprising a first representation representative of the hierarchical structure of the hierarchical database, a second representation representative of the hierarchical structure of XML documents valid for passing into and out of the hierarchical database, a database field name, and an XML element name that maps to the database field name; and
 - a mapping module in external communication with the hierarchical database and configured to pass data between an XML document and the hierarchical database using the metadata schema.

14. The apparatus of claim 13, wherein the mapping module is configured to store the eXtensible Markup Language (XML) document in the hierarchical database, the mapping module further comprising:

an input module configured to receive the XML document comprising

XML elements organized according to the metadata schema;

a matching module configured to match an XML element of the XML

document with a metadata element defined in the metadata

schema; and

a storage module configured to store content data from the XML element

in a database field of the hierarchical database identified by the

matching metadata element.

15. The apparatus of claim 14, further comprising:

an analysis module configured to examine each XML element in the XML

document and corresponding metadata element in the metadata

schema, in response to an index indicator identified within the

metadata schema for the XML document;

wherein the storage module is configured to store an index value from an

XML element identified by the index indicator; and

a generator configured to generate a secondary index that includes the first

database node and at least the index value, such that the first

database node is locatable using a database query that includes the

index value.

16. The apparatus of claim 13, wherein the mapping module is configured to retrieve the eXtensible Markup Language (XML) document from the hierarchical database, the apparatus further comprising:

an input module configured to receive a query for the XML document;

a matching module configured to match each database field of a sub-tree of the hierarchical database with a metadata element defined in a metadata schema;

a generator configured to generate an XML element defined by the matching metadata element, the XML element comprising content data from the matching database field; and

an assembler configured to assemble the XML elements into the XML document.

17. The apparatus of claim 13, wherein the metadata schema comprises a set of java classes representative of one or more nodes and one or more fields of the hierarchical database.

18. A system for passing data between an eXtensible Markup Language (XML) document and a hierarchical database, the apparatus comprising:
- an interface configured to receive commands for passing data between a hierarchical database and an XML document;
 - a database schema comprising a set of java classes representative of one or more nodes and one or more database fields of the hierarchical database, the java classes comprising a database field name and a corresponding XML element name;
 - an XML schema corresponding to the XML document and configured such that the XML schema comprises a representation of the hierarchical structure of the hierarchical database and an XML element name that maps to the database field name in the database schema; and
 - a mapping module in external communication with the hierarchical database and configured to pass data between the XML document and the hierarchical database using the database schema in conjunction with the XML schema.

19. The system of claim 18, wherein the interface comprises an input module configured to receive an XML document comprising XML elements organized according to the XML schema, and wherein the mapping module further comprises:

a matching module configured to match an XML element of the XML document with a metadata element defined in the metadata schema; and

a storage module configured to store content data from the XML element in a database field of the hierarchical database identified by the matching metadata element.

20. The system of claim 18, wherein the interface comprises an input module configured to receive a query for the XML document and portions of the XML document, and wherein the mapping module further comprises:

a matching module configured to match each database field of a sub-tree of the hierarchical database with a metadata element defined in a metadata schema;

a generator configured to generate an XML element defined by the matching metadata element, the XML element comprising content data from the matching database field; and

an assembler configured to assemble the XML elements into the XML document.